

What works for whom and in which circumstances?

**A realist evaluation of a complex intervention for pregnant
women with obesity**

Jane Raymond

Submitted to the University of Technology Sydney

In fulfilment of requirements for the degree of

Doctor of Philosophy

2016

Certificate of original authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Jane Raymond

10 May 2016

Acknowledgements

Writing this section brings me to the end of the long and eventful journey of my PhD. I arrived in Australia almost 10 years ago, and for 8 of those years I have been somewhere along this road. I would like to say some special words to the people who have shared this journey with me and supported me in so many ways.

To Caroline Homer, my principal supervisor; thank you for your endless patience, wisdom and sound guidance and for letting me do this my way, in my time, and not giving up on me during the process. Your ability to turn work around with the speed of light, to be always there when needed (wherever you are in the world), and to stand patiently in the wings when all is going well (or not going well) – is simply legendary. For your faith in me, despite the various setbacks, I will be forever grateful.

To Deb Davis, my second supervisor, you were an important part of the exciting time when the model 'SSWInG' became a reality, and it is thanks to you that motivational interviewing has now become so much part of my life. I will not forget how you generously shared your family time on a rainy weekend in Sydney to help me find my (rather desperate) way through the maze of qualitative analysis.

I would like to acknowledge the women and the staff in both hospitals where I collected my data, who so generously gave their time, and to our wonderful SSWInG facilitators Amanda and Judy, whose expertise, courage and professionalism never ceased to amaze. To my friends, colleagues and the research support team at UTS who have walked this journey alongside me, thank you for all the coffee meetings, for providing constructive feedback, and for asking all the right questions at all the right times. A special mention to Karol and Dave for their data recovery and formatting skills – without them this document simply would not be.

To my faithful 'Research Meeting' friends – Vanessa Clements, Felicity Copeland and Lyn Passant, thank you for your support and (probably feigned but well disguised) interest over many years as we have morphed from research meetings to nights-out. I have finally caught up with you all, and now we can officially re-name our meetings and move on! Vanessa Clements, extra special thanks for your friendship and unwavering support. You have shared so much of this journey – from the time we dreamt up 'SSWInG', made it a reality, developed a video about our experience, designed eLearning modules about motivational interviewing and gestational weight gain, taught, presented and published together – the 'real stuff' alongside the research has been an invaluable part of this learning experience. Your energy, enthusiasm and ability are truly inspiring.

Finally, to my very special family in the UK – thank you for your wise words, endless support, love and encouragement by phone call, Facetime, Skype and all other means of communication. To my 88 year old mother who remains intensely interested in this study and has diligently ploughed her way through the findings – thank you for your great commentary. A special note to my niece, Rhiannon, to whom I promised I would finish my PhD before she finished her HSC-equivalent. It looks like we will now cross the line together, a little later than planned, as you complete your university degree this month. I look forward to sharing some 'real' time with you and Richard, and all my wonderful family and friends in the very near future.

Conference Presentations

Raymond, J. (2008). *Layers of Evidence: a Contemporary Debate on Obesity in Pregnancy*
NSW Midwives Association conference, Blue Mountains, Australia

Raymond, J. Homer, C (2009). *Maternal Obesity: an Opportunity for Promoting Normal Birth*. Normal Labour and Birth 4th Research Conference, University of Central Lancashire, UK

Raymond, J. (2011). *Motivating Women to Take Hold of their Future*. A Midwifery Odyssey: ACM 17th National Conference, Sydney, Australia

Raymond, J., Homer, C.E., Davis, D. (2013). *The What, Who and Why: Weight Management Support for Obese Women during Pregnancy*. ACM 18th National Conference, Hobart, Australia

Raymond, J., Homer, C.E., Davis, D. (2014). *The What, Who, and Why: Weight Management Support to Improve Perinatal Outcomes for Obese Women*. The International Confederation of Midwives 30th Triennial Congress, Prague, Czech Republic

Table of Contents

Certificate of original authorship	i
Acknowledgements.....	ii
Conference Presentations.....	iv
Table of Contents	v
List of Tables.....	xi
List of Figures	xii
Abstract	xiii
CHAPTER 1 - INTRODUCTION	1
1.1 The intervention.....	2
1.2 My motivation for undertaking this study	3
1.3 The context for the study.....	5
1.3.1 Obesity and gestational weight gain	5
1.3.2 The clinical policy context in Australia in relation to obesity.....	7
1.3.3 The professional context of maternity care in Australia in relation to obesity	8
1.3.4 Complex interventions and the nature of evaluation	10
1.4 The research aim and objectives	11
1.5 Organisation of the thesis.....	12
1.6 Chapter summary.....	13
CHAPTER 2 - EXPLORING THE EVIDENCE	14
2.1 Introduction	14
2.2 Method.....	14
2.3 Obesity and gestational weight gain – an overview	15
2.3.1 Obesity.....	15
2.3.2 Gestational weight gain and impact on outcomes.....	21
2.4 Interventions designed to influence gestational weight gain	29
2.4.1 Interventions – an overview.....	29
2.4.2 Strategies that have been shown to be helpful	31

2.4.3 Recent intervention studies	33
2.4.4 Interventions in Australia - acceptability and feasibility	35
2.4.5 Summary - interventions to limit weight gain in pregnancy	36
2.5 The views and beliefs of obese women in relation to antenatal care and gestational weight gain	37
2.5.1 Acceptability of antenatal care	37
2.5.2 Maternal knowledge and attitude in relation to gestational weight gain	39
2.5.3 Maternal motivation for change	42
2.5.4 Summary - the views and beliefs of obese women	43
2.6 The knowledge, attitudes and practice of health professionals in relation to obesity and gestational weight gain	43
2.6.1 Reluctance to provide advice	44
2.6.2 Inadequate expertise and knowledge	45
2.6.3 Lack of confidence	46
2.6.4 Summary - the knowledge, attitudes and practice of health professionals	47
2.7 Evidence summary	48
2.8 The research gap – what is known and not known	49
CHAPTER 3 - METHODOLOGY	53
3.1 Introduction	53
3.2 The development of theory-driven evaluation.....	53
3.3 Realist evaluation.....	56
3.3.1 Critical realism	58
3.4 Using the realist evaluation methodology in practice	61
3.4.1 The components of the realist evaluation framework.....	61
3.4.2 Approaches to data collection.....	64
3.4.3 The process of analysis and the development of middle range theory	67
3.4.4 Using the findings from realist evaluation	69
3.4.5 Examples of studies using the realist evaluation framework	70
3.4.6 Challenges and limitations of realist evaluation	72

3.5 Chapter summary.....	74
CHAPTER 4 - THE INTERVENTION.....	75
4.1 Introduction	75
4.1.1 Complex interventions	75
4.2 The design of the intervention.....	76
4.2.1 Identification of the existing evidence	77
4.2.2 The use of theory to develop the intervention	79
4.2.3 Group antenatal care.....	80
4.3 Description of the intervention	83
4.3.1 Structure of the group sessions.....	84
4.3.2 Governance of the intervention and local support.....	86
4.3.3 Women’s participation in the intervention.....	86
4.3.4 Preparation of healthcare providers	87
4.4 The intervention locations	88
4.4.1 Local variation in intervention design and delivery	90
4.5 Chapter summary.....	91
CHAPTER 5 - RESEARCH METHODS	92
5.1 Introduction	92
5.2 Clarification and awareness of my research role	92
5.3 Ethics approval	95
5.4 Study Design.....	98
5.4.1 Stage One - development of context-mechanism-outcome configurations	98
5.4.2 Stage Two - identification of data sources	102
5.4.3 Stage Three – data collection	107
5.4.4 Stage Four - data analysis	114
5.5 Chapter summary	121
CHAPTER 6 - FINDINGS.....	123
Introduction	123

Chapter 6 – Findings section A	125
6.1 Women who participated in the intervention	125
6.1.1 Contextual factors	126
6.1.2 Outcomes - or ‘what worked for whom?’	128
6.1.3 Mechanisms - or ‘why did the outcomes occur in some circumstances and not others?’	133
6.1.4 Section summary	150
Chapter 6 – Findings section B.....	152
6.2 Midwives and midwifery students in the antenatal clinics who offered the intervention to women	152
6.2.1 Contextual factors	153
6.2.2 Outcomes - or ‘what worked for whom?’	154
6.2.3 Mechanisms – or ‘why do the outcomes work in some circumstances and not in others?’	158
6.2.4 Section summary	170
Chapter 6 – Findings section C.....	173
6.3 Midwives, dietitians and physiotherapists who facilitated the intervention groups.....	173
6.3.1 Contextual factors	174
6.3.2 Outcomes – or ‘what worked, and for whom?’	176
6.3.3 Mechanisms – or ‘why do the outcomes work in some circumstances and not in others?’	181
6.3.4 Section summary	192
Chapter 6 – Findings section D	194
6.4 Additional key stakeholders involved in the intervention groups.....	194
6.4.1 Contextual Factors.....	195
6.4.2 Outcomes - or ‘what worked for whom?’	196
6.4.3 Mechanisms – or ‘why do the outcomes work in some circumstances and not in others?’	200
6.4.4 Strategies for successful sustainability and transferability	205
6.4.5 Section summary	208

6.5 Summary of findings	210
6.5.1 The women	210
6.5.2 The health professionals	211
6.5.3 Chapter summary	215
CHAPTER 7.....	216
- REFINEMENT OF THE CONJECTURED CMO CONFIGURATIONS	216
- THE GENERATION OF THEORY	216
7.1 Introduction	216
7.2 Refinement of the CMO configurations.....	216
7.2.1 The conjectured CMO configurations – or what was planned.....	216
7.2.2 The refined CMO configurations – or what actually happened	217
7.2.3 Section summary	227
7.3 The generation of theory	228
7.3.1 Introduction	228
7.3.2 Defining the theoretical concepts	229
7.3.3 Developing the model	231
7.4 Chapter summary.....	235
CHAPTER 8 – DISCUSSION	236
8.1 Introduction	236
8.2 Applying the model for predicting behaviour in relation to gestational weight management	236
8.2.1 Intention (readiness)	237
8.2.2 Ability (skills and knowledge)	253
8.2.3 Opportunities (environmental)	261
8.2.4 Section summary	263
8.3 Pulling it all together – or where to from here?	263
8.3.1 Implications for practice	264
8.3.2 Future research potential	268
8.4 Chapter summary.....	269

CHAPTER 9 - USING REALIST EVALUATION IN THE REAL WORLD	270
9.1 Introduction	270
9.2 Methodological challenges	270
9.2.1 Initial theory: getting the context right	272
9.2.2 The issue of timing – and time	274
9.2.3 The meaning of mechanisms.....	275
9.2.4 Testing the CMO configurations.....	277
9.3 Limitations of my study.....	279
9.4 Future potential for realist evaluation.....	283
9.5 Chapter summary.....	284
9.6 Conclusion to the thesis.....	284

Appendices

Appendix 1: Program for the intervention group sessions.....	287
Appendix 2: Ethics approval letters	289
Appendix 3: Sample consent forms and information sheets.....	293
Appendix 4: The Conjectured CMO Realist Hypothesis Grid	297
Appendix 5: Sample focus group questions for staff offering women the intervention at the booking in visit.....	302
Appendix 6: NVivo matrix: confidence to discuss weight and weight gain	303
Appendix 7: Detailed characteristics of the study participants	304
Appendix 8: The Refined CMO Realist Hypothesis Grid	307

References	315
-------------------------	------------

List of Tables

Table 1: World Health Organization BMI categories	16
Table 2: Institute of Medicine guidelines for gestational weight gain	23
Table 3: Summary of the evidence reviewed in Chapter 2.....	48
Table 4: The intervention compared to standard antenatal care	84
Table 5: Demographic and maternity contexts of Location A and B	89
Table 6: Variations in design and delivery of the intervention at locations A and B.....	90
Table 7: Stages of the realist evaluation cycle	98
Table 8: Examples of local and evidence-based contextual (C) features	100
Table 9: Examples of intended mechanisms (M) and target groups	101
Table 10: Examples of intended outcomes (O) and target groups	101
Table 11: CMO configurations developed for this study	102
Table 12: Forms of data collected for my study and their origin	103
Table 13: Study participants at each location.....	104
Table 14: Summary of the women's demographic characteristics and selected birth outcomes.....	125
Table 15: What worked, for whom and in which circumstances – women who participated in the study.....	151
Table 16: Summary of midwives' and midwifery students' demographic characteristics	152
Table 17: What worked, for whom and in which circumstances – midwives and midwifery students offering the intervention.....	172
Table 18: Summary of the facilitators' professional group and location of work	173
Table 19: What worked, for whom and in which circumstances – facilitators delivering the intervention.....	193
Table 20: Summary of the additional key stakeholders' occupation and location of work	194
Table 21: Strategies for successful sustainability and transferability of the intervention	206
Table 22: What worked, for whom and in which circumstances – additional stakeholders involved in the intervention.....	209

List of Figures

Figure 1: The analysis framework of the study	117
Figure 2: Example of a recurring CMO configuration	223
Figure 3: Example of a negative CMO case	225
Figure 4: Example of a positive feedback loop	226
Figure 5: Example of a negative feedback loop	227
Figure 6: Model of Gestational Weight Management Behaviour Prediction	232

Abstract

Background

Maternal obesity ($\text{BMI} \geq 30 \text{ kg/m}^2$) is a global public health concern, impacting negatively on the health of women and their babies. Women who are obese are more likely than women of normal weight ($\text{BMI} < 25 \text{ kg/m}^2$) to gain excessive weight during pregnancy, increasing their risk of adverse outcomes. Evidence supports the view that gestational weight gain can be influenced through lifestyle intervention, but few antenatal services with this specific aim exist in Australia. This study describes a realist evaluation of a complex healthcare intervention designed to support obese women to achieve a healthy weight gain during pregnancy.

Setting

The intervention was introduced simultaneously in 2 locations in Sydney, Australia and these provided comparative case studies for the evaluation. Antenatal care was provided in a group setting, and focussed on supporting obese pregnant women to achieve a 'healthy' gestational weight during pregnancy, according to the Institute of Medicine gestational weight gain guidelines.

Design

A theory-driven evaluation approach, employing the realist evaluation framework, was used to develop theory around what worked for whom and in which circumstances, for clinicians, managers and women who participated in the intervention. The intervention strategies were supported by initial theory (self-efficacy), described by Context-Mechanism-Outcome (CMO) configurations. These configurations were examined and refined during analysis, enabling the development of middle range theory.

Methods

A mixed method approach was utilised, employing both quantitative and qualitative data. The analysis involved a two-phase sequential process; comparative analysis followed by thematic analysis.

Findings

The findings highlighted that context has a strong influence on outcomes, and that unseen mechanisms can act as both barriers and enablers. Self-efficacy does play an important part in predicting positive gestational weight gain behaviour, for both clinicians and obese pregnant women. However, the refined theory underpinning the intervention was more complex than originally hypothesised. A theoretical model was developed to describe the interplay between intention, ability and opportunity in predicting individuals' response to the intervention and the possibility of change. The Theory of Planned Behaviour and Social Learning Theory are the middle range theories underpinning this model.

Implications for practice

Group antenatal care designed to support women to achieve a healthy gestational weight gain has not previously been identified as an intervention to address the risks presented by maternal obesity. The theoretical model developed through the process of realist evaluation highlights key features that would enable a similar intervention to 'work' in an alternative setting.